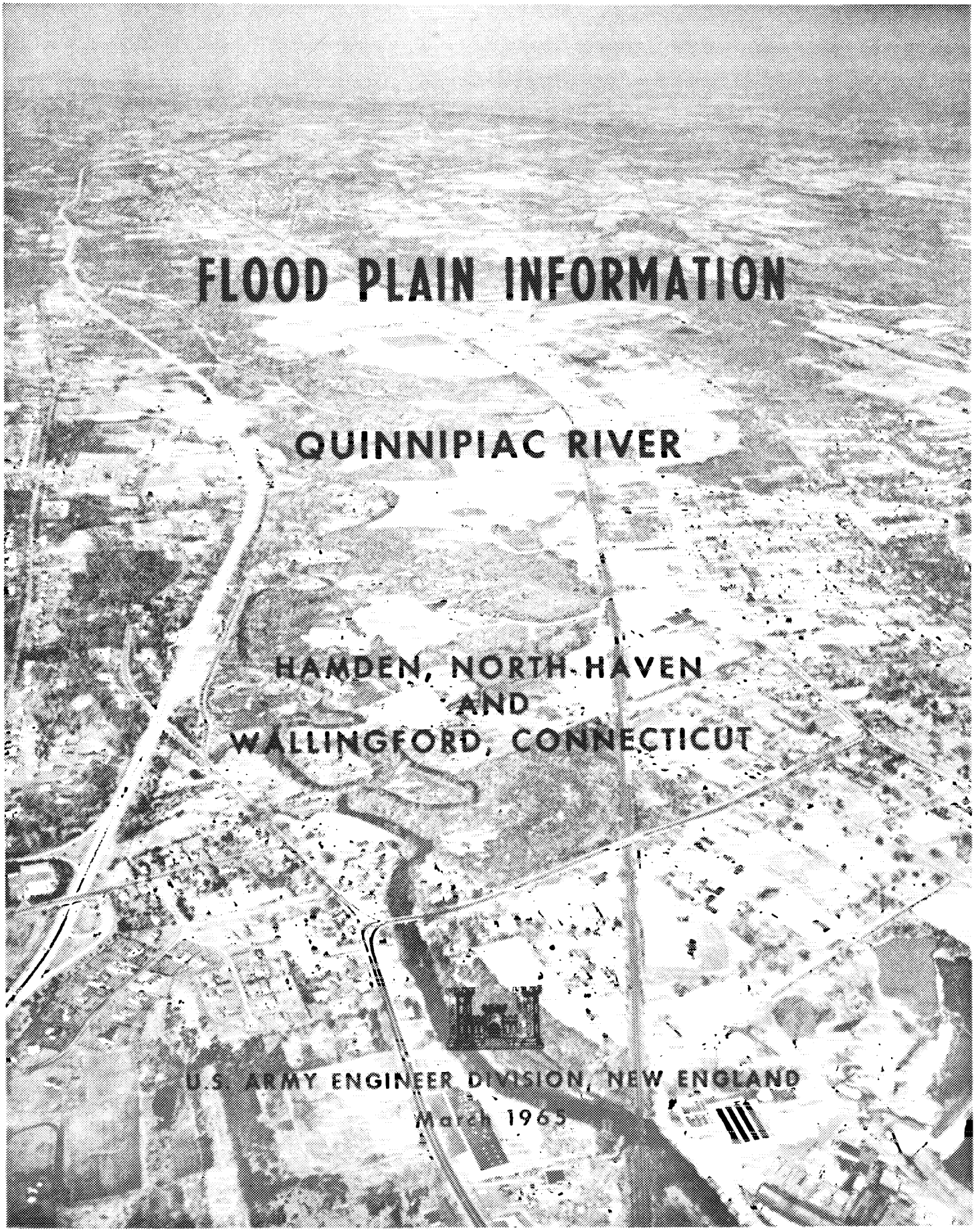


FLOOD PLAIN INFORMATION

QUINNIPIAC RIVER

HAMDEN, NORTH HAVEN AND WALLINGFORD, CONNECTICUT

U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
March 1965

FLOOD PLAIN INFORMATION

QUINNIPIAC RIVER

HAMDEN, NORTH HAVEN

AND

WALLINGFORD, CONNECTICUT

(SUMMARY REPORT)

This study authorized under Section 206,
Public Law 86-645, was requested by the Towns.

U. S. Army Engineer Division, New England
Corps of Engineers
Waltham, Mass.

March 1965

COVER PHOTO

Courtesy of

Greater New Haven Chamber of Commerce
Industrial Development Committee

INTRODUCTION

Since time began, heavy rains and melting snows have periodically changed small brooks and peaceful rivers into raging torrents which overflow their banks and endanger whatever lies on the nearby lowland. Before man found reason to build and live on these plains, floods were of little consequence; but with the coming of civilization and the occupation of these lands, floods frequently result in disaster to individuals, their families and their communities.

In terms of geological time severe floods are a frequent occurrence. In terms of a man's life, they are rare - rare enough to dull the memories of destruction and to allow him to build on land which he is vaguely aware may possibly be subject to some sort of flood hazard.

During the last 25 years, the Federal government has spent huge sums of money to reduce the human suffering and property damages that are caused by floods. The dikes, floodwalls and flood control reservoirs that have resulted have more than paid for themselves. Nonetheless, flood losses today are as great, if not greater, than ever before because of man's continuing encroachment on the flood plain. People, often without realizing the risk, are constructing new developments in

flood-prone areas and are reducing channel capacities by filling in flood channel areas. Examples can be found in most every riverside community. Flood hazards are thereby increased and the effectiveness of existing flood control works is correspondingly diminished.

To assist communities in reducing future flood damages and for planning the use of areas subject to flooding, Congress has authorized the Corps of Engineers to publish information on flood hazards. In addition, the Water Resources Commission of the State of Connecticut has been directed to establish encroachment lines along the State's rivers. Any proposed development within these lines will require a permit from that agency.

At the request of the towns of North Haven, Hamden and Wallingford, a flood plain information report has been prepared by the Corps of Engineers for the Quinnipiac River within the town limits. That report is intended to assist the towns in establishing flood plain regulations and to aid property owners in weighing the advisability of further building in the flood plain. Copies of that report are available for inspection at the Planning and Zoning offices in each town involved. This pamphlet has been prepared for a wider public distribution, to create a general awareness of the continuing flood problem along the Quinnipiac River, and to help insure that future development will be made with the knowledge of the potential flood risks and hazards.

FLOOD PROBLEMS

The problem of flooding along the Quinnipiac River from the New Haven town line to Sackett Point Road in North Haven is primarily caused by abnormal tides such as occurred in September 1938 and August 1954. From Sackett Point Road to the Wallingford town line, the flooding is caused by a combination of abnormal tides and river flow resulting from heavy rains. In Wallingford, the problem is caused by the river flow only, as was experienced in September 1938 and August 1955.

Historical records indicate that in 1869 the Quinnipiac River experienced a notable flood. It is reported that there were $2\frac{1}{2}$ feet of water in the office of what is now the Wallace Silversmiths in Wallingford. Of more recent time, the greatest flood was that of September 1938 when a hurricane storm created extreme high tides coupled with more than 12 inches of rainfall. However, the loss within the study area was relatively minor due to the lack of development in the flood plain at that time.

Flooding in the tidal portion was experienced again in 1954 because of a hurricane. The following year, in August and October 1955, storms of tropical origin caused general flooding. These floods, resulting from an average rainfall of about nine inches, were 60 to 75 percent of the

river flow experienced in 1938. A less critical flood occurred in March 1936 when approximately three inches of rain combined with melting snow on frozen ground created the fourth largest flood of the recent record.

The heights of the 1938 and August 1955 floods are marked on the photograph below. The flooded area maps (plates 1, 2 and 3) show the areas covered by those floods. The depth of water on a particular piece of property can be determined by comparing its ground elevation with the flood profiles on plates 4, 5 and 6.

Quinnipiac River, North Haven, Connecticut
Elevations of High Water in Vicinity of Broadway - September 1964

To date, the people living or working along the Quinnipiac River have been more fortunate than their neighbors living on other streams in western Connecticut. One reason is that the extensive ponds and

swamps store some of the runoff and reduce the rate of flow. The photo below shows one of these areas. Another, perhaps more important reason is that the valley has escaped the heavier rainfall experienced in other areas of Connecticut.

Quinnipiac River, Wallingford, Connecticut
South of Wilbur Cross Parkway - August 1962

If the 15 inches of rain that fell over the Farmington and Upper Naugatuck Rivers in August 1955 had also fallen on the Quinnipiac, the flood would have been greater than the 1938 flood. This possible flood is shown as the 7,000 c.f.s. flood on the flood profiles accompanying this report. The tidal portion of the 7,000 c.f.s. flood was assumed to have a similar probability and represents a tidal flood about three feet higher than was experienced in September 1938.

On the basis of the flood history of the region, it would appear that every year there is a 4 percent chance that tides would occur similar to September 1938. The odds on the flooding due to the September 1938 rainfall are less with an annual chance of occurrence of 1 to 1.5 percent. These estimates by their nature cannot be exact but do give reasonable probabilities for flooding based on the past records.

All of the floods shown on the exhibits are intended to serve only as guides. There can, of course, be no assurance that a flood comparable to the 7,000 c.f.s. flood will not occur in the near future nor can it be guaranteed that floods comparable to the August 1955 and September 1938 in the Quinnipiac will not occur more than once in the next 25 or 30 years.

WHAT CAN BE DONE

The study indicates that except for the Banton Street and Broadway areas of North Haven and possibly a few others, past flooding has not created any serious hardship. However, with the probability of greater floods and the pressures of industrial expansion now being considered, proper flood plain regulations can be of great value in achieving orderly growth of the communities and preclude the suffering from such floods and the need for costly flood control improvements.

The ultimate goal of flood plain regulations is to provide for optimum land use consistent with flood hazards and industrial growth. This requires the evaluation of certain costs not associated with upland development, such as cost of protection, flood proofing, higher insurance rates and possible flood losses. In addition to costs, the effect of obstructions such as land fill must be analyzed to determine that it does not create new flood problems for others upstream or downstream. Recognizing the degree of risk involved, consideration may be given to retaining the lower levels for open use such as parking areas, parks and recreation areas. Any structure permitted in the lower levels would be the type that could be flooded without serious consequence. In the higher elevations, structures for commercial or industrial use might be permitted provided they are structurally sound, waterproof and cause no serious restriction to the movement of flood waters.

The objectives of such a program can be achieved in many ways. The more common are:

Encroachment Lines. The State of Connecticut and the three towns have the authority to establish lines along the river beyond which no obstruction or encroachment may be made without a permit.

Zoning. The towns have the authority to establish zoning similar to other types of zoning authorized for the health, safety and general welfare of the community.

Subdivision Regulation. With zoning in effect, subdivision regulations can be amended to control uses in the flood plain.

Building Codes. These ordinances can establish requirements that will insure that buildings are waterproof and will not float off their foundations.

Others. The towns could purchase some of the lands and combined with an open space conservation program form an effective means of controlling the flood plain. In addition, financial institutions may assist by denying funds for projects in which they estimate the flood risk to be too great.

Other means of reducing flood damages for existing conditions would be to modify structures to make them flood proof, keep channels clear of debris or fallen trees which may pile up against bridges and thereby create temporary dams and also by maintaining an efficient warning and evacuation system incorporated with Civil Defense measures. The flood warning system should be coordinated with the U. S. Weather Bureau office at Bradley Field, Windsor Locks, Connecticut, since they are responsible for forecasting floods in the Quinnipiac River.

Long-range planning to reduce future flood damages and still allow for orderly growth of the communities will require cooperation and coordination among the three towns and the State of Connecticut. It has been shown time and time again that preventive measures must be taken

in advance of an emergency, for once a flood has started countermeasures are usually too late to be effective. It is therefore urged that past lessons be remembered. Rivers when on a rampage have a habit of asserting their own real estate rights in flood plain areas.

"IT WASN'T RAINING WHEN NOAH BUILT THE ARK"

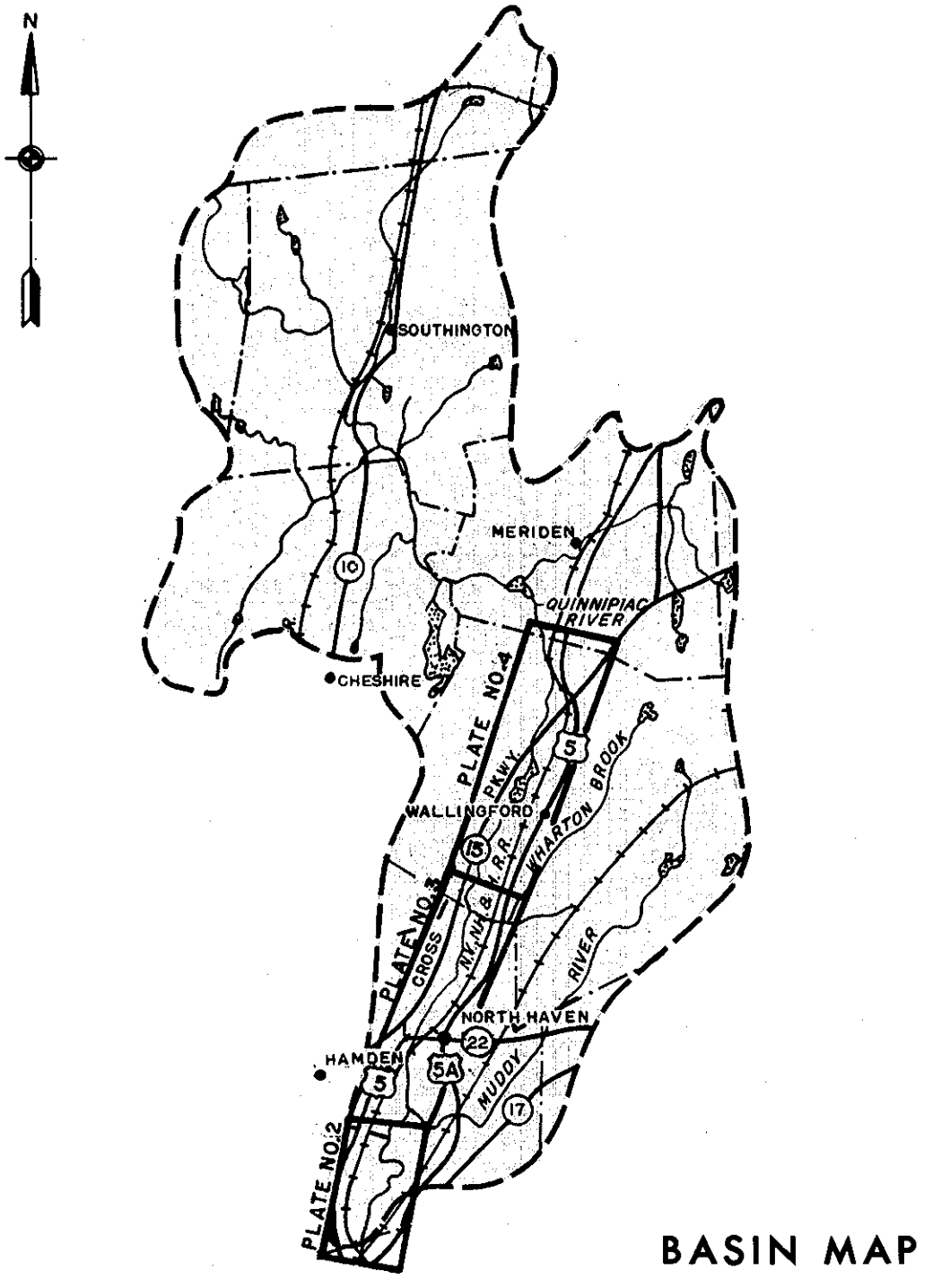
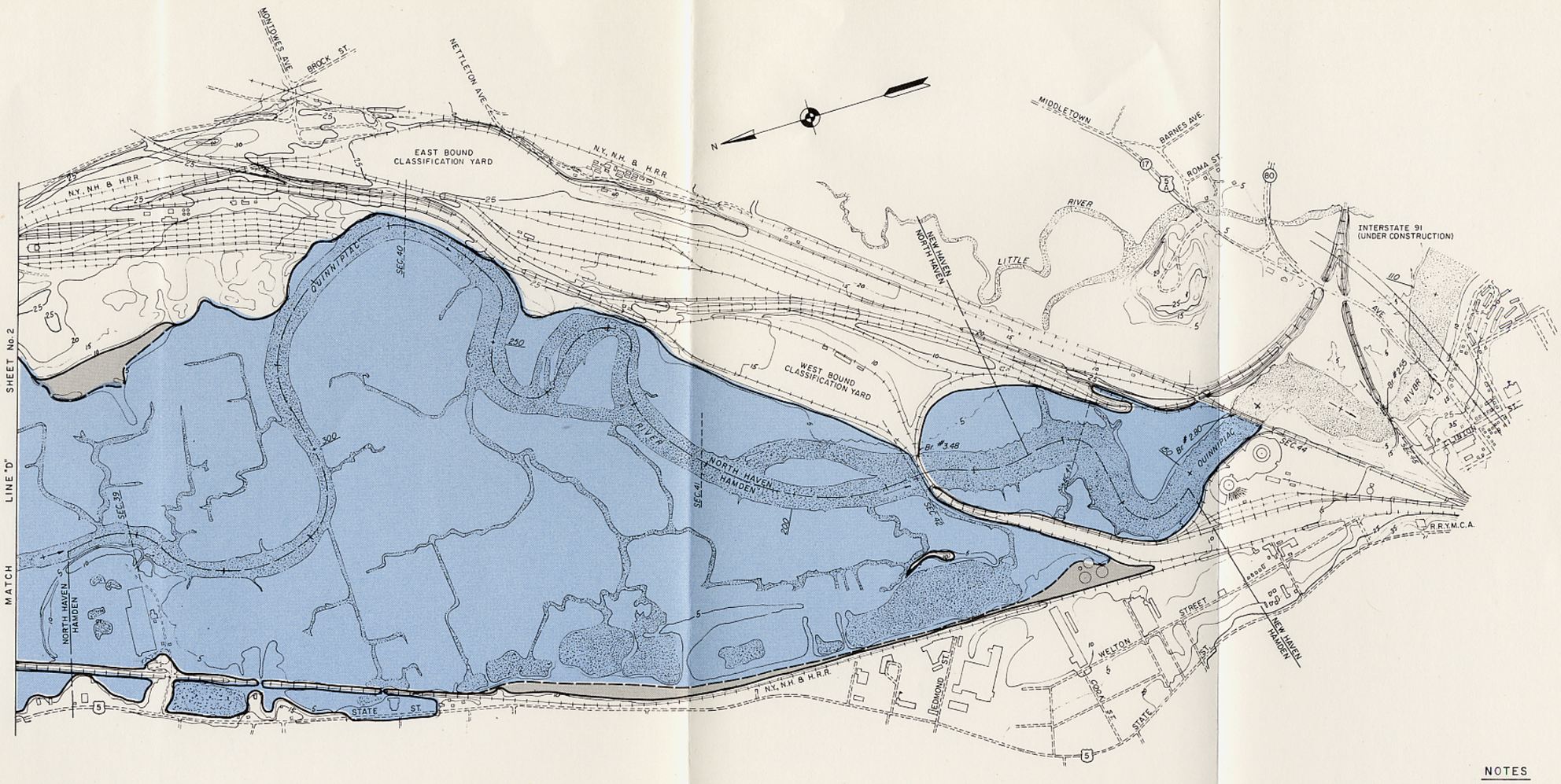

N
SOUTHINGTON
MERIDEN
QUINNIPIAC RIVER
CHESHIRE
PLATE NO.4
PKWY.
WALLINGFORD
WHARTON BROOK
N.Y.N.H. & H.R.R.
PLATE NO.3
CROSS
RIVER
NORTH HAVEN
HAMDEN
MUDDY
PLATE NO.2
10
5
15
22
5A
17
BASIN MAP
SCALE IN MILES
1 0 5

PLATE NO. I.

CORPS OF ENGINEERS

U. S. ARMY



NOTES

Elevations refer to Mean Sea Level Datum.
Contour interval equals five feet.
Topography is based on U.S.G.S. Maps and Conn. Hwy Dept. 200 Scale Photogrammetry.
℄ Distance in Hundred Feet from U.S. Rte. 1 Bridge.

LEGEND:

Normal River — Flood of Aug. 1955 — Max. Flood of Record Sept. 1938

FLOOD PLAIN INFORMATION
QUINNIPIAC RIVER
NORTH HAVEN, HAMDEN & WALLINGFORD, CONN.

FLOOD AREAS

SHEET 1 OF 3 — STA. 120 TO 340

JANUARY 1965

U.S. ARMY ENGINEER DIVISION NEW ENGLAND
CORPS OF ENGINEERS WALTHAM, MASS

PREPARED BY PHILIP W. GENOVESE AND ASSOCIATES CONSULTING ENGINEERS NEW HAVEN, CONN.

PLATE NO. 2

CORPS OF ENGINEERS

U. S. ARMY

NOTES:

Elevations refer to Mean Sea Level Datum
Contour interval equals five feet.
Topography is based on U.S.G.S. Maps and Conn. Hwy. Dept. 200 Scale Photogrammetry.
℄ Distance in Hundred Feet from U.S. Rte. 1 Bridge.

LEGEND:

Normal River | Flood of Aug. 1955 | Max. Flood of Record Sept. 1938

FLOOD PLAIN INFORMATION
QUINNIPIAC RIVER
NORTH HAVEN, HAMDEN & WALLINGFORD, CONN.

FLOOD AREAS

SHEET 2 OF 3 STA. 340 TO 780

JANUARY 1965

U.S. ARMY ENGINEER DIVISION NEW ENGLAND
CORPS OF ENGINEERS WALTHAM, MASS.

PREPARED BY PHILIP W. GENOVESE AND ASSOCIATES CONSULTING ENGINEERS NEW HAVEN, CONN.

PLATE NO. 3

CORPS OF ENGINEERS

U. S. ARMY

NOTES:

Elevations refer to Mean Sea Level Datum
Contour interval equals five feet.
Topography is based on U.S.G.S. Maps and Conn. Hwy Dept 200 Scale Photogrammetry.
℄ Distance in Hundred Feet from U.S. Rte. 1 Bridge.

LEGEND:

Normal River — Flood of Aug. 1955 (Max. flood of Record - Sept. 1938 covered approx. same area.)

FLOOD PLAIN INFORMATION
QUINNIPIAC RIVER
NORTH HAVEN, HAMDEN & WALLINGFORD, CONN.

FLOOD AREAS

SHEET 3 OF 3 — STA. 780 TO 1160

JANUARY 1965

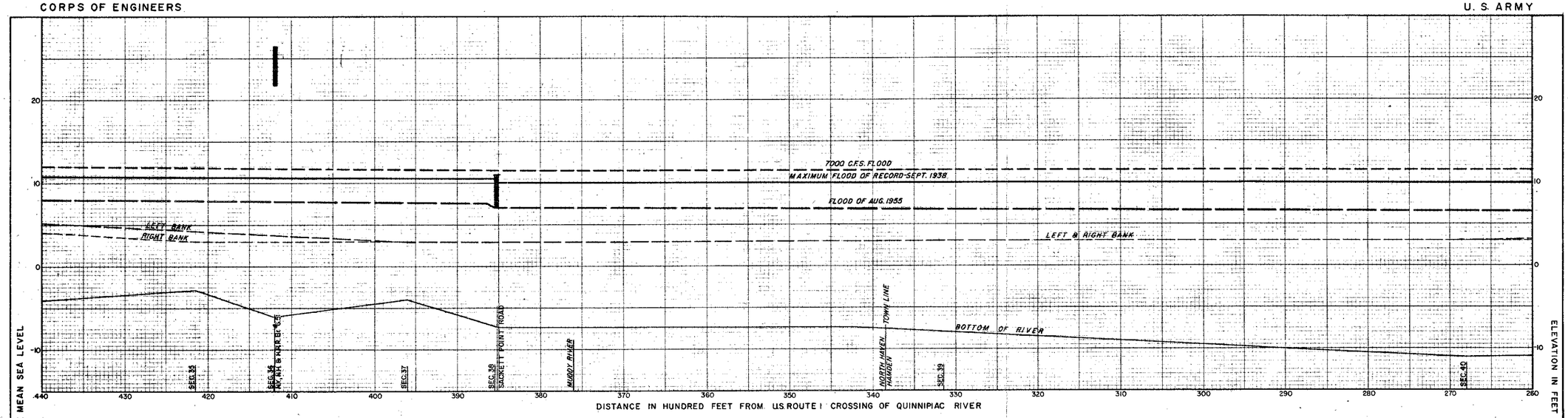
U.S. ARMY ENGINEER DIVISION NEW ENGLAND
CORPS OF ENGINEERS WALTHAM, MASS.

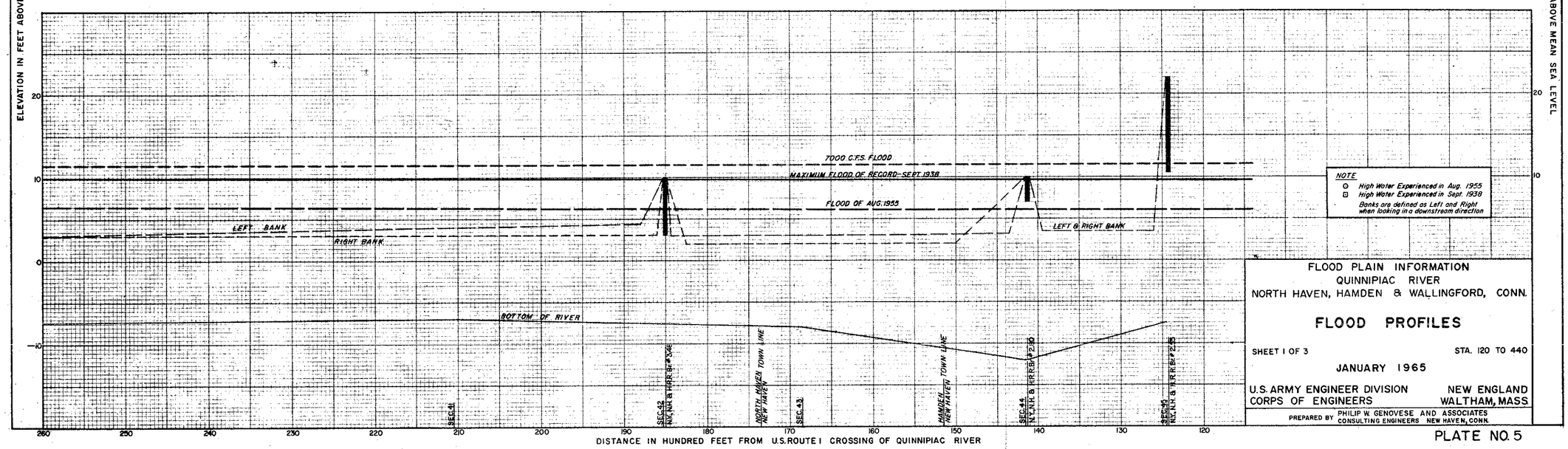
PREPARED BY PHILIP W. GENOVESE AND ASSOCIATES CONSULTING ENGINEERS NEW HAVEN, CONN.

PLATE NO. 4

CORPS OF ENGINEERS

U. S. ARMY





NOTE
- ○ High Water Experienced in Aug. 1955
- ⊡ High Water Experienced in Sept. 1938

Banks are defined as Left and Right when looking in a downstream direction

FLOOD PLAIN INFORMATION
QUINNIPIAC RIVER
NORTH HAVEN, HAMDEN & WALLINGFORD, CONN.

FLOOD PROFILES

SHEET 1 OF 3 — STA. 120 TO 440

JANUARY 1965

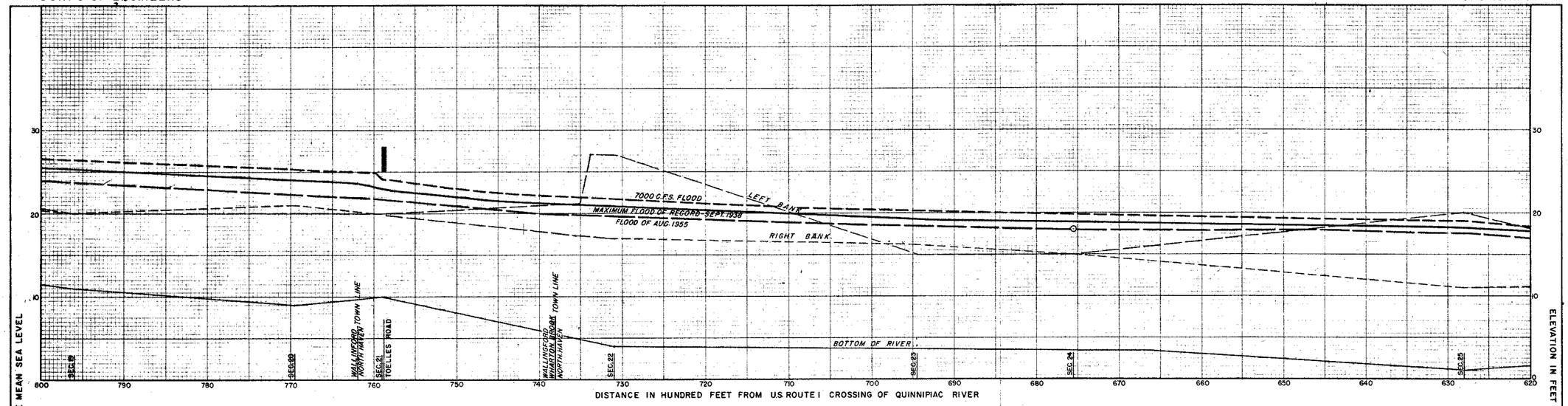
U.S. ARMY ENGINEER DIVISION NEW ENGLAND
CORPS OF ENGINEERS WALTHAM, MASS.

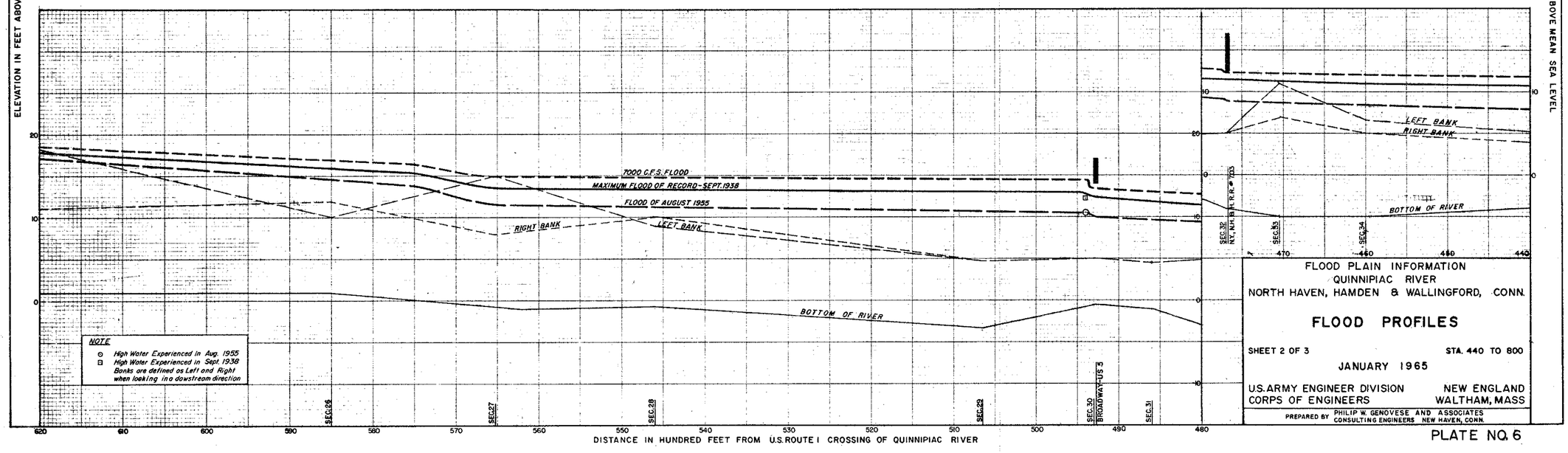
PREPARED BY PHILIP W. GENOVESE AND ASSOCIATES CONSULTING ENGINEERS NEW HAVEN, CONN.

PLATE NO. 5

CORPS OF ENGINEERS

U. S. ARMY





NOTE

⊙ High Water Experienced in Aug. 1955

⊡ High Water Experienced in Sept. 1938

Banks are defined as Left and Right when looking in a downstream direction

FLOOD PLAIN INFORMATION
QUINNIPIAC RIVER
NORTH HAVEN, HAMDEN & WALLINGFORD, CONN.

FLOOD PROFILES

SHEET 2 OF 3 STA. 440 TO 800

JANUARY 1965

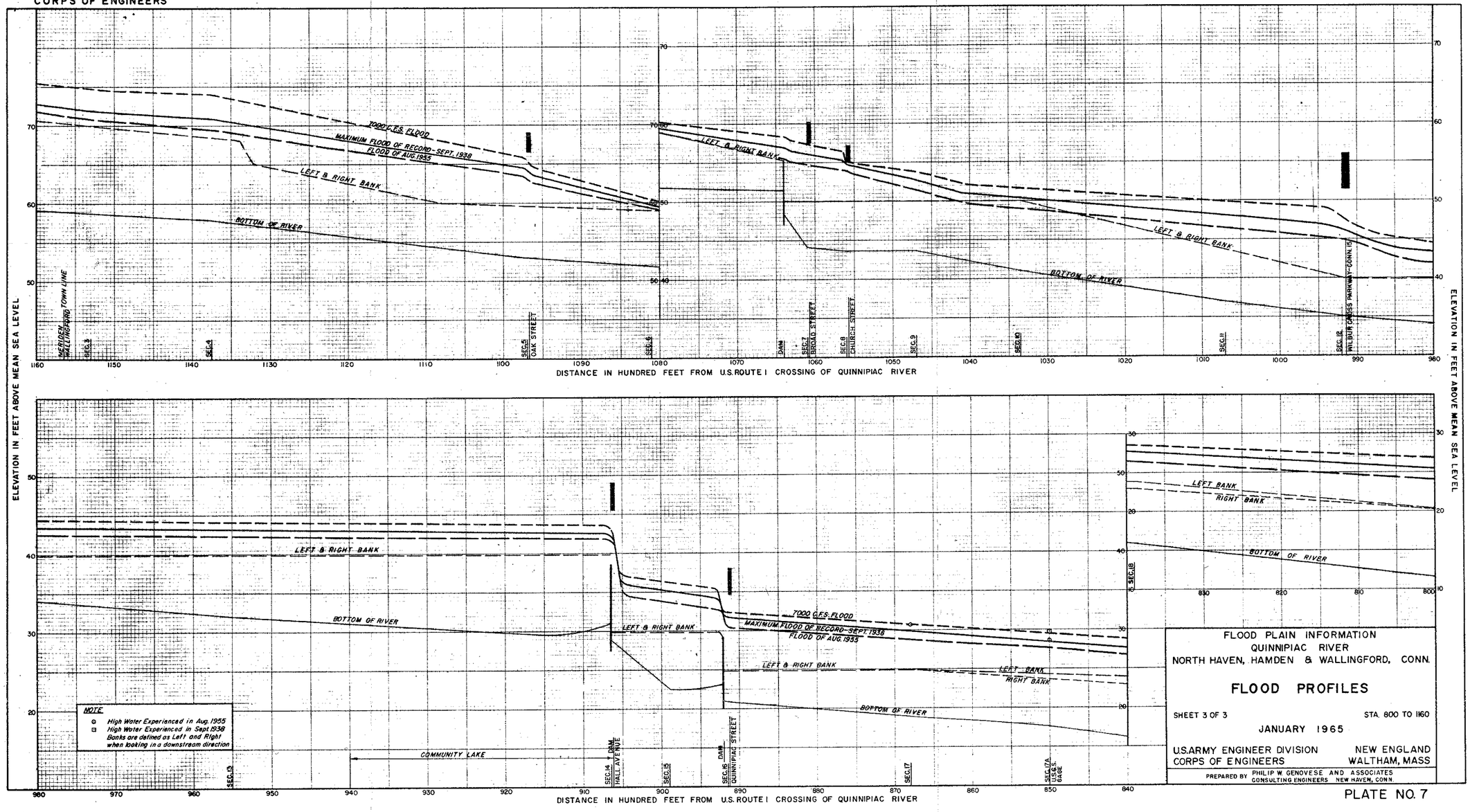
U.S. ARMY ENGINEER DIVISION NEW ENGLAND
CORPS OF ENGINEERS WALTHAM, MASS

PREPARED BY PHILIP W. GENOVESE AND ASSOCIATES CONSULTING ENGINEERS NEW HAVEN, CONN.

PLATE NO. 6

CORPS OF ENGINEERS

U. S. ARMY



FLOOD PLAIN INFORMATION
QUINNIPIAC RIVER
NORTH HAVEN, HAMDEN & WALLINGFORD, CONN.

FLOOD PROFILES

SHEET 3 OF 3 — STA. 800 TO 1160

JANUARY 1965

U.S. ARMY ENGINEER DIVISION NEW ENGLAND
CORPS OF ENGINEERS WALTHAM, MASS

PREPARED BY PHILIP W. GENOVESE AND ASSOCIATES
CONSULTING ENGINEERS NEW HAVEN, CONN.

PLATE NO. 7